PROJECT FACT SHEET

CONTRACT TITLE: Application of Integrated Reservoir Management and Reservoir Characterization to Optimize Infill Drillings -- Class II

ID NUMBER: DE-FC22-93BC14989

B&R CODE: AC1010000

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PROJECT SITE
CITY: N.Robertson Clearfork Unit **STATE**: TX
CITY: Gaines County **STATE**: TX
CITY: **STATE**:

CONTRACT PERFORMANCE PERIOD:
6/13/1994 to 6/12/1999

PROGRAM: Field Demonstration
RESEARCH AREA: Class 2
PRODUCT LINE: ADIS

FUNDING (1000'S)	DOE	CONTRACTOR	TOTAL
PRIOR FISCAL YRS	8747	11557	20304
FISCAL YR 1999	0	0	0
FUTURE FUNDS	0	0	0
TOTAL EST'D FUNDS	8747	11557	20304

OBJECTIVE: Demonstrate the application of advanced secondary recovery technologies to remedy producibility problems in shallow-shelf carbonate reservoirs in the Permian Basin, Texas.

Dec 1999

PROJECT DESCRIPTION:

Background: Infill drilling of wells on a uniform spacing, without regard to reservoir performance and characterization, does not optimize reservoir development because it fails to account for the complex nature of reservoir heterogeneities present in many low-permeability reservoirs, and carbonate reservoirs in particular. New and emerging technologies, such as cross-borehole tomography, geostatistical modeling, and rigorous decline type curve analysis, can be used to quantify reservoir quality and the degree of interwell communication. These results can be used to develop a 3-D simulation model for prediction of infill locations.

Work to be Performed: The objective of this five-year project is to demonstrate the application of advanced secondary recovery technologies to remedy producibility problems in typical shallow shelf carbonate reservoirs of the Permian Basin, Texas. The problems include poor sweep efficiency, poor balancing of injection and production rates in certain areas of the reservoir, and perforation and stimulation treatments that are inadequate for optimal production and injection.

PROJECT STATUS:

Current Work:

Scheduled Milestones:

Perform integrated reservoir management of field demonstration	06/99
Complete economic evaluation and field demonstration recommendation	06/99
Complete final report	09/99

Accomplishments: We have demonstrated that production data, available to all operators, can be used for detailed reservoir characterization in a cost-effective manner. Methods similar to using production data analysis are being developed for analyzing waterflood performance and assessing producibility problems. Cost-effective methods for well testing and other surveillance have been developed and field tested. In spite of the maturity of waterfloods in the onshore U.S., water quality is often overlooked and partly responsible for poor secondary recovery. Surveillance and enhancement methods have been field tested. Use of geostatistics for characterizing highly heterogeneous and compartmentalized reservoirs has proven to be valuable even though it is resource intensive. Both conventional and geostatistical based methods are valuable for reservoir management and future field development optimization, but application of conventional simulation technologies often results in over-optimistic production forecasts. Work to date predicts that geologically targeted drilling can capture reserves for nearly half the cost of a blanket drilling program. The initial production rates for the 14 producing wells drilled as part of the program are approximately 18% higher than any previous development program. These 14 wells resulted in an initial incremental production response of approximately 900 BOPD. The project is expected to ultimately produce 1.4 million barrels of incremental oil from North Robertson Unit and 2.2 million incremental barrels of oil from the field. Geostatistical and 3-D reservoir modeling have been 40% more successful in identifying drilling locations. New foam frac technology along with low fluid loss borate gel system increased waterflood production in the North Robertson Unit. The project has increased field production by 18% since beginning the field demonstration.